

REMARKS

Claims 1-24 are pending in this application. By this Amendment, claims 1, 4, 5, 7, 16, 20 and 22-23 are amended. Various amendments are made to the claims for clarity and are unrelated to issues of patentability.

The Office Action rejects claims 1-3, 5 and 7-24 under 35 U.S.C. §102(e) by U.S. Patent Publication 2001/0016920 to Chan. The Office Action also rejects claims 4 and 6 under 35 U.S.C. §103(a) by Chan and further in view of U.S. Patent 5,884,051 to Shaffer. The rejections are respectfully traversed.

Independent Claim 1

Independent claim 1 recites active module, a standby module, a C-channel and a D-Channel. More specifically, independent claim 1 recites the active module having a primary bus, a primary central processing unit coupled to the primary bus that carries out control and data processes, a primary arbiter coupled to the primary bus that arbitrates use of the primary bus, a primary memory controller coupled to the primary bus that controls access to a primary memory coupled to the primary bus, a primary D-channel controller separate from the primary memory controller and coupled to the primary bus and having a primary first-in first-out (FIFO) memory for the communication of parallel data on a duplexing path, and a primary C-channel controller, separate from the primary D-channel controller and separate from the primary memory controller and coupled to the primary bus, that communicates primary status information of the active module. Independent claim 1 also recites numerous features regarding the standby module.

Chan does not teach or suggest all these features of independent claim 1. More specifically, Chan does not teach or suggest a primary central processing unit, a primary arbiter, a primary memory controller, a primary D-channel controller and a primary C-channel controller coupled to a primary bus. While Chan may disclose a PCI bus 228A and a separate memory bus 230A (FIG. 4), this does not suggest the claimed features coupled to the primary bus, as recited in independent claim 1. Further, the Office Action has not identified any element of Chan as corresponding to the claimed primary arbiter that arbitrates use of the primary bus.

Additionally, Chan does not suggest a primary D-channel controller separate from a primary memory controller and coupled to the primary bus and having a primary first-in first out (FIFO) memory for the communication of parallel data on a duplexing path. The Office Action appears to rely on Chan's memory control logic unit 244A and arbitration logic unit 246A (FIG. 5A) as corresponding to the D-channel controller. However, these features clearly do not suggest a D-channel controller separate from a primary memory controller (that controls access to a primary memory). Chan's memory control logic unit 244A and arbitration logic unit 246A are provided within the first memory controller 224A and therefore cannot be considered separate from the memory controller 224A. There is no suggestion for the units 244A and 246A to be separate from the first memory controller 224A. Still further, Chan's memory control logic unit 244A and arbitration logic unit 246A do not include the claimed primary first-in first-out (FIFO) memory.

Even further, Chan does not teach or suggest a primary C-channel controller separate from a primary memory controller and coupled to the primary bus that communicates primary

status information of the active module. The Office Action appears to rely on Chan's reset and fail logic unit 248A (FIG. 5A) as corresponding the claimed C-channel controller. However, the reset and fail logic unit 248A does not suggest a C-channel controller separate from the primary memory controller (that communicates primary status information of the active module). Chan's reset and fail logic unit 248A is clearly provided within the first memory controller 224A and therefore cannot be considered separate from the memory controller 224A. There is no suggestion for the unit 248A to be separate from the first memory controller 224A.

For at least similar reasons as set forth above, Chan also does not include all the features of the standby module such as the various features coupled to the secondary bus, the secondary arbiter, the secondary D-channel controller and the secondary C-channel controller.

Accordingly, Chan does not teach or suggest all the features of independent claim 1. Independent claim 1 therefore defines patentable subject matter.

Independent Claim 17

Independent claim 17 recites that both the active mode status and the standby mode status are identified by a self-side normal signal and a pair-side active signal sent over the C-channel between the first device and the second device.

Chan does not teach or suggest all these features of independent claim 17. In particular, the Office Action cites Chan's paragraph [0047] as corresponding to these features. However, paragraph [0047] relates to the memory controller having a register that stores a bit pattern indicating whether the controller 224 is the master or the slave. The Office Action also states that the reset and fail logic unit 248A corresponds to the claimed C-channel controller.

However, the reset and fail logic unit 248A does not receive a self-side normal signal and a pair-side active signal. Rather, the unit 248A receives a reset signal 281A (from management control logic unit 216), a local fail signal 282A (from the fail safe logic unit 226A) and an external fail signal 284A (from the alternative I/O control logic unit 212B). These signals 281A, 282A and 284A do not suggest that both the active mode status and the standby mode status are identified by a self-side normal signal and a pair-side active signal sent over the C-channel between the first device and the second device.

Accordingly, Chan does not teach or suggest all the features of independent claim 17. Independent claim 17 therefore defines patentable subject matter. Should the Patent Office maintain the rejection of claim 17, the Patent Office is requested to identify the features in Chan corresponding to claim 17.

Independent Claim 22

Independent claim 22 defines patentable subject matter for at least similar reasons. For example, independent claim 22 recites reading a first status of the first device transmitted over the C-channel, reading a second status of the second device transmitted over the C-channel, and setting one of the first and second devices to an active mode status and the other one of the first and second devices to a standby mode status based on the first and second status both transmitted over the C-channel, wherein both the first status and the second status are identified by a self-side normal signal and a pair-side active signal.

The Office Action does not teach or suggest all the features of independent claim 22. The Office Action cites Chan's paragraph [0047] as corresponding to the claimed features.

However, Chan's paragraph [0047] does not relate to reading a first status of the first device transmitted over the C-channel and reading a second status of the second device transmitted over the C-channel. Rather, this section relates to the memory controller 224 storing a bit pattern indicating whether the memory controller 224 is the master or slave. Chan does not suggest the first status of the first device and the second status of the second device are both transmitted over the C-channel. Further, there is no suggestion in Chan for setting the devices based on first and second status both transmitted over a C-channel.

Accordingly, Chan does not teach or suggest all the features of independent claim 22. Independent claim 22 therefore defines patentable subject matter. Should the Patent Office maintain the rejection of claim 22, the Patent Office is requested to identify the features in Chan corresponding to claim 22.

Independent Claim 5

Independent claim 5 recites reading a secondary status of a secondary module, via a C-channel, with a primary module, comparing the secondary status with a primary status of the primary module to obtain a first result, determining a direction of a D-channel based upon a value of the first result, and determining which one of the primary and secondary modules is an active module based upon the value of the first result, the C-channel coupling the primary module with the secondary module and the D-channel, separate from the C-channel, also coupling the primary module with the secondary module. Independent claim 5 also recites reading only the contents of a first memory in the active module to a processor within the active

module that requested the contents, when the processor performs a memory read operation of the first memory, and concurrently writing data to the first memory and to a second memory in the one of the primary and secondary modules that is not the active module and is, therefore, designated a standby module, when the processor performs a memory write operation. Still further, independent claim 5 recites recognizing, with the standby module, that a fault has occurred in the active module by identifying an abnormal signal communicated by a C-channel controller of the active module, changing the active module to a standby mode of operation.

Chan does not teach or suggest these features of independent claim 5. In particular, the Office Action merely references Chan's paragraphs [0040] and [0047] for these features. However, these do not relate to features such as comparing the secondary status with a primary status to obtain a first result and determining a direction of a D-channel based on a value of the first result. Additionally, Chan does not teach or suggest features reading only the contents of a first memory, and writing data to a first memory and to a second memory. Accordingly, Chan does not teach or suggest all the features of independent claim 5. Independent claim 5 therefore defines patentable subject matter. Should the Patent Office maintain the rejection of claim 5, the Patent Office is requested to identify the features in Chan corresponding to claim 5.

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Dependent Claims


Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this reason. In addition, each of the dependent claims recites features that further and independently distinguish over the applied references.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-24 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **David C. Oren**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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